CSE101

C Programming

L:3 T:0 P:2 **Credits: 4**

Lecture 0

Welcome!!!!

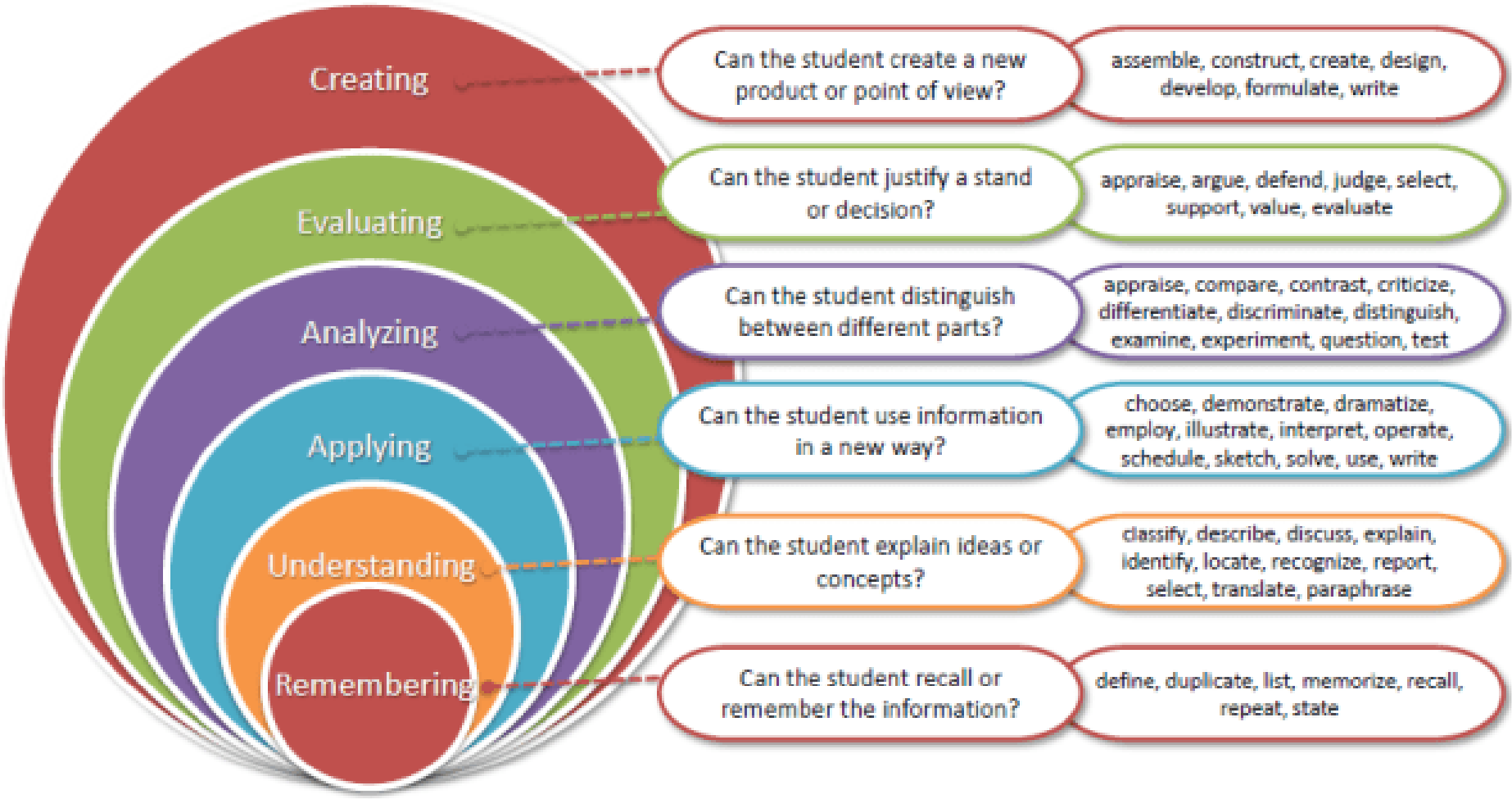
Vision

To be a globally recognized school through excellence in teaching, learning, and research for creating Computer Science professionals, leaders, and entrepreneurs of the future contributing to society and industry for sustainable growth.

Mission

- To build computational skills through hands-on and practice-based learning with measurable outcomes.
- To establish a strong connect with industry for in-demand technology driven curriculum.
- To build the infrastructure for meaningful research around societal problems.
- To nurture future leaders through research-infused education and lifelong learning.
- To create smart and ethical professionals and entrepreneurs who are recognized globally

Revised Bloom's Taxonomy



What will be the course outcome?

- discuss the various approaches towards solving a particular problem using the C language constructs.
- write programs to solve different problems using C constructs irrespective of the compilers.
- plan the process of code reuse by forming a custom library of one's own functions.
- complete the understanding and usage of one of the building blocks of data structures namely pointers
- categorize the theoretical knowledge and insights gained thus far to formulate working code
- validate the underlying logic and formulate code which is capable of passing various test cases

Program Outcomes achieved from the course

- Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- Identify, formulate, review research literature, and analyses complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
- Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

Program Outcomes achieved from the course

Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

Program Educational Objectives achieved from the course

Apply acquired skills in software engineering, networking, security, databases, intelligent systems, cloud computing and operating systems to adapt and deploy innovative software solutions for diverse applications.

Apply diverse IT skills to design, develop, and evaluate innovative solutions for business environments, considering risks, and utilizing interdisciplinary knowledge for efficient real-time projects benefiting society.

Syllabus

Unit I

Basics and introduction to C : The C character set, Identifiers and keywords, Data types, Constants and variables, Expressions, Arithmetic operators, Unary, Relational, Logical, Assignment and conditional operators, Bitwise operators

Unit II

Control structures and Input/Output functions : If, If else, Switch case statements, While, For, Do-while loops, Break and continue statements, Goto,Return, Type conversion and type modifiers, Designing structured programs in C, Formatted and unformatted Input/Output functions like printf(), Scanf(), Puts(), Gets() etc

Unit III

User defined functions and Storage classes : Function prototypes, Function definition, Function call including passing arguments by value and passing arguments by reference, Math library functions, Recursive functions, Scope rules (local and global scope), Storage classes in C namely auto, Extern, Register, Static storage classes

Unit IV

Arrays in C : Declaring and initializing arrays in C, Defining and processing 1D and 2D arrays, Array applications, Passing arrays to functions, inserting and deleting elements of an array, Searching including linear and binary search methods, Sorting of array using bubble sort

Unit V

Pointers, Dynamic memory allocation : Pointer declaration and initialization, Types of pointers - dangling , wild, null, generic (void), Pointer expressions and arithmetic, Pointer operators, Operations on pointers, Passing pointer to a function, Pointer and one dimensional array, Dynamic memory management functions (malloc, calloc, realloc and free)

Unit VI

Strings,Derived types including structures and unions : Defining and initializing strings, Reading and writing a string, Processing of string, Character arithmetic, String manipulation functions and library functions of string, Declaration of a structure, Definition and initialization of structures, Accessing structures, Structures and pointers, Nested structures, Declaration of a union, Macros and its types(object-like, function-like, chain, multi-line)

Course Assessment Model

CSE101	**Marks break up***
Attendance	5
Programming Practice(Mandatory)	15
Code Based Test (one best out of two CBTs)	15
Written CA (Mandatory)	20
ETP (Practical /Laptop)	45
Total	**100**

- **# No MTE**

Academic Tasks

Academic Task	Tentative Week
CA-1: Programming Practice (MCQs + Coding) (Mandatory)	Week1 – Week14
CA-2: Mix of MCQs + Coding Problems	Week 5
CA-3: Mix of MCQs + Coding Problems	Week 9
CA-4: Written Test	Week 12

Course Details

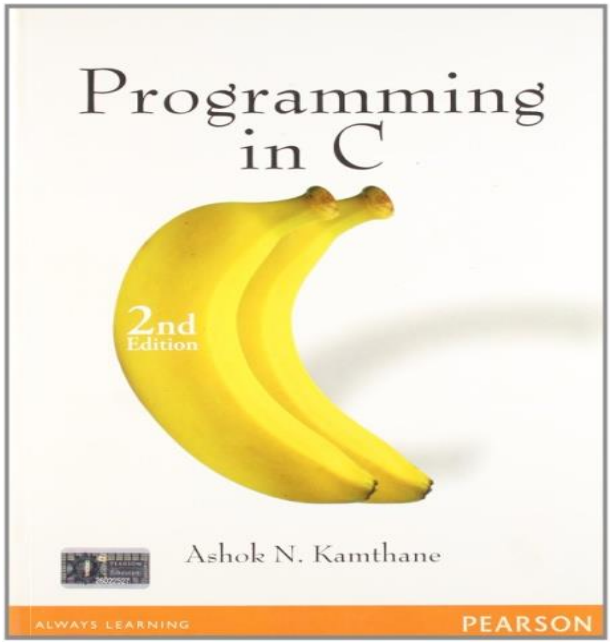
Text Book

- PROGRAMMING IN C”

by

ASHOK N. KAMTHANE

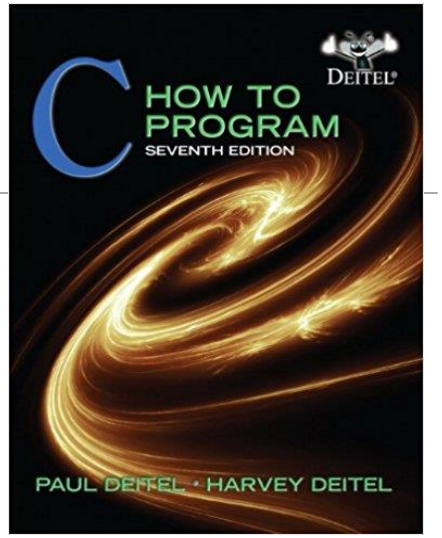
PEARSON, 3rd Edition



Reference Books

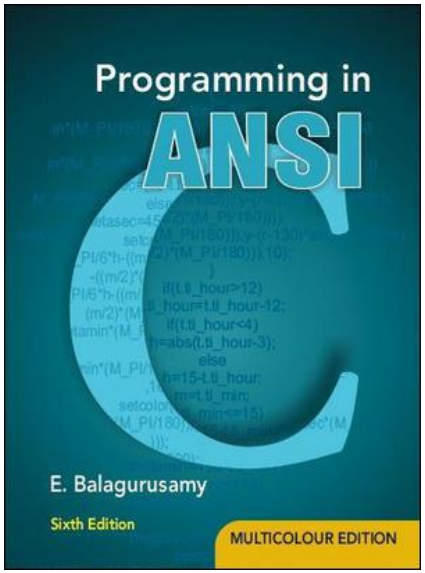
- "C HOW TO PROGRAM" by

PAUL DEITEL AND
HARVEY DEITEL
PHI(Prentice Hall India)



- "PROGRAMMING IN ANSI C"

By E. BALAGURUSAMY
McGraw Hill Education



Practice Problems

- In the Practice Problems marks are only for coding Problems.

- MCQs are only for practice.

Unit wise Sequence locking

Marks Calculation for Programming Practice

- In order to qualify for programming practice marks, the student must solve a minimum of 50% (50% Coding Problems + 50% MCQs) problems (eligibility condition)
- No marks for MCQs.

Scoring Criteria:

The students will be given approx. 90 coding problems and 90 MCQs on the third party platform. The questions will be framed with equal distribution from the complete syllabus. In order to qualify for programming practice marks, the student should solve at least 50% of the coding problems and 50% of MCQ questions (eligibility condition).

Marks Calculation for Programming Practice

The maximum marks out of 15 marks for which the student would be eligible for Programming Practice would be based on the Percentage of scored marks in the questions solved by the student.

The final marks for Programming Practice would be calculated by prorating the eligible marks for which the student is eligible (as explained in the above point) with the percentage of marks student has scored in the proctored Coding Contests conducted as CA's along with mandatory written test. (The final marks would be rounded up for the students)

Marks Calculation for Programming Practice

Example – If a student solves 72 questions out of 90 questions (i.e. 80% questions solved) then the student would be eligible for 80% of 15 marks which is 12 marks.

And if the student has scored 24 out of 30 in the other CA's(written test + CBT) i.e. 80% marks in CA, his Programming practice final marks would be 80% of 12 marks that he was eligible for which is 9.6 rounded up to 10 marks out of 15 for Programming Practice.

Daily Practice Problems

S. No	Unit	Question	Tentative Dates for Completion
1	Unit-1	At-least 15 Multiple Choice Questions and 15 Coding problems in each unit	31st January 2025
2	Unit-2		20th February 2025
3	Unit-3		9th March 2025
4	Unit-4		30th March 2025
5	Unit-5		13th April 2025
6	Unit-6		30th April 2025

Note:- Most Important for the improvement of Performance in Course Assessments.

End Term Practical (45 Marks)

- Online Assessment on third party Platform [30%] [Mix of Coding Problem and MCQs]
- Written Component [30%]
- Viva [40%]

The assessment marks (Coding + MCQs) of online platforms in ETP, will be prorated as per viva marks and written marks collectively, if the student will score less than 60% in the viva and written exam.

Example: If student scores 20 marks out of 40 in viva and 15 out of 30 in written test that is 50% and in online test student scored 18 out of 30 that is 60% so final marks awarded to the student in online test will be 50% of 18 that is 9/30.

Why Star Course?

- Weightage in Gate/Govt. exams
- Industry demand
  - Product Based
  - Service Based
- Higher Studies
- Government Jobs

Cohort

Software Development

- Product based
- Service based

MOOCs

Not Applicable

Skill Set

Programming Skills

Logic building

Code analysis

Platform Used

Live Demonstration of Third Party Platform (IamNeo)

Thank you!